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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/982,587      | 10/17/2001  | Yosuke Fujii         | SIW-016             | 7569             |

959 7590 05/30/2003

LAHIVE & COCKFIELD  
28 STATE STREET  
BOSTON, MA 02109

EXAMINER

RUTHKOSKY, MARK

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1745

DATE MAILED: 05/30/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

in

**Office Action Summary**

Application No.

09/982,587

Applicant(s)

FUJII ET AL.

Examiner

Mark Ruthkosky

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \*   c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.                      6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement filed 10/17/2001 has been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Drawings***

The examiner approves the drawings, filed on 10/2001.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "A Fuel Cell Separator with a Sealing Member Formed Channel."

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Davis (GB 2,326,017.)

The instant claims are to a fuel cell comprising a pair of separators; a membrane electrode assembly (MEA) including an electrolyte membrane and an anode and a cathode disposed at both sides of the electrolyte membrane with the membrane electrode assembly being held by the separators by a sealing member; and a reactant gas channel is disposed between the MEA and of the separators with a part of the reactant gas channel being formed seamlessly by a part of the sealing member.

Davis (GB 2,326,017) teaches a fuel cell assembly including a bipolar plate attached to a membrane electrode assembly (MEA) including an electrolyte membrane and an anode and a cathode disposed at both sides of the electrolyte membrane (see figure 3.) A sealing member holds the membrane electrode assembly to the separator. The separator plate is made of a thermoplastic resin and a conductive material, including carbon, metals or plated metal layers, and includes a plurality of grooved channels (page 5) that transfers reactants. The plate may be heat bonded to the electrode. In another embodiment, a layer of a thermoplastic or adhesive may be added to the face of the plate at contact portions to fuse the plate to the anode or cathode (page 6.) The bonding or adhesion of the separator will form a seamless gas channel with the electrode. Thus, the claim is anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Davis (GB 2,326,017) as applied to claim 1 above, and further in view of Nishida (GB 2,326,017.)

Davis (GB 2,326,017) teaches a fuel cell assembly including a bipolar plate attached to a membrane electrode assembly (MEA) including an electrolyte membrane and an anode and a cathode disposed at both sides of the electrolyte membrane (see figure 3.) A sealing member forming a plurality of gas channels as previously disclosed holds the membrane electrode assembly to the separator. The reference does not teach the separator to be made of a thin metal plate or that a gas channel has a turning portion where a boundary of the turning portion is constituted by the sealing member.

Nishida (GB 2,326,017) teaches a fuel cell including a separator plate attached to a membrane electrode assembly (MEA) including an electrolyte membrane and an anode and a cathode sandwiching the electrolyte membrane (see figure 3.) The separator plate is made of thin metals and includes a plurality of grooved channels (figures) that transfer reactants. A gas guiding phenol groove with a turning portion is disclosed. As the phenol projecting parts form a groove for guiding gas, the material is a sealing member. It would be obvious to one of ordinary skill in the art at the time the invention was made to use a thin metal plate as a separator material

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of Davis (GB 2,326,017) as the material can be prepared with grooves to form flow channels and the material is also conductive as noted in both references. Further, the plate can have turning portions made of a gas sealing material as noted in Nishida (GB 2,326,017.) One of ordinary skill in the art would recognize that the additions of adhesive or thermoplastic materials to a metal separator plate will further serve to seal the gas channels and fuse the plate to the anode or cathode as taught in Davis (GB 2,326,017.)

The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art does not read upon the instant claims, however, the references include general teachings and relevant features as to the state of the art at the time of the invention.

### ***Examiner Correspondence***

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 703-305-0587. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:00.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 703-308-2383.

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The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Mark Ruthkosky

Patent Examiner

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6/26/03